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COSMOLOGICAL CONTINGENCY AND THEISTIC EXPLANATION

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In this paper, I respond to Adolf Grünbaum's charge that the cosmological problem to which the theological doctrine of divine creation would, if true, be a solution is really only a pseudoproblem. My discussion focuses on three questions: Why does the possible world that is in fact actual obtain, rather than any of the other possible worlds? Why does a possible world with the natural laws of the actual world obtain, rather than some possible world with a different nomological structure? And why does a possible world in which some contingent things exist obtain, rather than the possible world in which nothing contingent exists? I argue that each of these questions can be understood in such a way that it avoids Grünbaum's pseudoproblem charge. I also argue that the second and third questions give rise, if pressed, to problems that science cannot solve. Their ultimate answers are either appeals to inexplicable brute facts, which are not explanatory, or appeals to extrascientific explanations, which could be theological.

Cosmological Contingency and Theistic Explanation

This paper is meant to be a contribution to debate with Adolf Grünbaum that I have been involved in for a decade. It begins with Grünbaum's 1989 paper "The Pseudo-Problem of Creation in Physical Cosmology."[1] My contribution to the 1993 *festschrift* in Grünbaum's honor, "Creation, Conservation, and the Big Bang," criticized that paper.[2] Grünbaum subsequently responded to me, as well as to other critics, in several essays, most notably in a 1996 paper "Theological Misinterpretations of Current Physical Cosmology," a substantially revised version of which was published in 1998, and in a 2000 paper "A New Critique of Theological Interpretations of Physical Cosmology."[3] This paper is my rejoinder to Grünbaum's response to me, focusing particularly on the form his criticism of my views takes in his 2000 paper. In it I offer new arguments to defend some of my views against a central point of his new critique. I do not, however, try to defend the views of Grünbaum's other critics from his responses to them.

Stated in a general way, Grünbaum's position is that those who think contemporary physical cosmology poses a problem about the existence of matter-energy to which the theological doctrine of divine creation provides a solution are mistaken. As the title of his 1996 paper indicates, Grünbaum sometimes expresses his point by charging that the theological doctrine of

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creation involves a misinterpretation of current physical cosmology. And as the title of his 1989 paper shows, he sometimes puts it by charging that the alleged problem to which that theological doctrine is supposed to be a solution is in reality a pseudoproblem. In my 1993 paper, I argued that the problem to which the doctrine of divine creation offers a solution is not a pseudoproblem. Grünbaum's response to this argument in his 2000 paper was to clarify what he means by the charge of being a pseudoproblem and then to offer in response to me and other critics a strengthened argument in support of the charge. So in the course of this paper I reply to his new argument. I try to show that theists can formulate the problem to which the doctrine of divine creation is addressed in such a way that Grünbaum's charge of being a pseudoproblem fails to apply to it.

In my 1993 paper, I also presented a theoretical account of the doctrine of divine creation and conservation that I had worked out elsewhere and provided an explanation of how it contributes to solving the genuine problem about the existence of matter-energy posed by current physical cosmology. Grünbaum's 2000 paper sets forth a battery of objections to the particular theory I espouse. I do not think they show that it is untenable, though I am prepared to admit that they reveal some limitations of the sort of explanations offered by the theological doctrine of creation and conservation. But since this paper is already very long, I must defer replying to them until another occasion.

But before I turn my attention to the details of Grünbaum's new critique, let me say a word about why I think my debate with Grünbaum is of philosophical interest. Some theists try to find in current physical cosmology premises for arguments that prove the existence of God. Of course Grünbaum criticizes arguments of this sort. However, I do not wish to defend such arguments; I do not place much stock in this kind of natural theology. The trouble with such arguments, as I see it, is not that we know there to be no logically sound arguments for the existence of God some of whose premises are drawn from contemporary physical cosmology. For all I know, there may be one or more such arguments. The difficulty is rather that all the arguments of this type known to me invoke at least some controversial premises that it is rationally permissible to reject. No such argument proceeds to the conclusion that God exists solely from premises with an exalted epistemic status such as self-evidence or certainty. Hence no such argument transfers from its premises to its conclusion or otherwise confers on its conclusion an epistemic status that renders belief in God rationally required or mandatory. In other words, no such argument is a proof of the existence of God, even if it is sound, in the sense that it appeals only to premises that almost every sane or rational person accepts or should accept. Thus it seems to me that the most that a theist can hope for from any such argument is that it relies only on premises that the theist is rationally permitted or entitled to accept. I therefore think that William L. Rowe is on target when, after a careful and detailed analysis of several versions of the cosmological argument for God's existence, he concludes that theists "would do well to abandon the view that the Cosmological Argument is a proof of theism, and, in its place, pursue the possibility that the Cosmological Argument shows the reasonableness of theistic belief,

even though it perhaps fails to show that theism is true."[5] If theists follow Rowe's advice, not just with respect to the cosmological argument but also with other arguments of natural theology, they will, to be sure, have to relinquish the aspiration to frame a natural theology that would furnish them with a positive apologetics for theism suited to be rationally compelling to all reasonable nontheists. It seems to me that, over the past three centuries, most Christian theists, though not by any means all of them, have abandoned this aspiration and learned to live without this variety of positive apologetics. Such theists can afford to view Grünbaum's critique of arguments for belief in God from premises drawn from physical cosmology with a certain amount of equanimity.[6]

I do not think that Christian theists can afford to view the more radical implications of Grünbaum's new critique with similar equanimity, however. If Grünbaum can make the pseudoproblem charge stick, then current physical cosmology does not even raise genuine problems or questions that theism, if true, would contribute to solving or answering. If that were the case, then theism would lose its traditional role of making a contribution to our understanding or explanation of the cosmological realm, forfeiting that role entirely to natural science. Such a development would, in turn, increase the pressure on theists to view their religious commitments as wholly subjective and to yield to the social forces in the modern world that press in the direction of religious privatization. It seems to me that the modern world has a place in it for a privatized type of religiosity or spirituality according to which one's religion is what one does with one's solitude. But, on my view, it would be a disaster for Christianity to succumb to the temptation to transform itself into nothing but a constellation of subjective attitudes. So I am convinced that the stakes for Christian theism in my debate with Grünbaum are quite high.

Having indicated why I regard this debate as important, I now turn my attention to the task of making a fresh contribution to it.

In his 2000 paper, Grünbaum reaffirms the pseudoproblem charge. Near its beginning, he concludes an outline of the case he proposes to argue by claiming "therefore, the question calling for an external cause of the very existence of the world is a *non-starter*, i.e. it poses a *pseudo-problem*" (p. 5, Grünbaum's emphasis). Later on in the paper, he offers a welcome clarification of the exact significance of the pseudoproblem charge. Distancing himself from positivistic allegations of meaninglessness, Grünbaum says this: "I favor the use of the pejorative term 'pseudo-problem' to derogate a question that rests on an ill-founded or demonstrably false presupposition; yet in so doing, I definitely do not intend to hark back to the early positivist indictments of 'meaninglessness'" (p. 19). Hence, in order to understand the pseudoproblem charge we must get clear about what question Grünbaum wishes to focus on and which of its presuppositions he takes to be ill-founded or demonstrably false.

I approach this issue indirectly, starting with some general reflections on a particular type of why-question. Questions of this type might be called explanation-seeking contrastive why-questions. An example will help me to make some points about such questions. You come to visit my graduate seminar and observe a student in a blue beret leading a discus-

sion on Spinoza's *Ethics*. You ask me this: Why is the student in the blue beret leading the discussion, rather than one of the other students in the class? My reply to your question is as follows: I assigned her to lead the discussion, and I did so because she is the only student in the class who is writing a dissertation on Spinoza. I take it that my answer to your question, if true, is perfectly adequate. In asking your question, you have presented me with a range of possible alternatives; you have invited me to tell you both why one of the multiple possibilities is actual and why none of the others is actual. In telling you that I assigned the student in the blue beret to lead the discussion, I explain why she is leading the discussion. And in giving you my reason for choosing her, I explain why none of the other students is doing so and thereby eliminate the other alternatives. I take it that in the explanatory practice of common life explanation-seeking contrastive why-questions are frequently asked and often receive adequate answers. In this practice, of course, contextual factors, as well as the explicit language in which the question is framed, usually contribute to determining what will count as an adequate answer.

My simple example will serve to illustrate several points that play a role in the subsequent discussion. First, explanation-seeking contrastive why-questions do have presuppositions, normally several of them. Thus, for instance, if you had asked why the student in the blue beret is leading the discussion rather than any of the eight other students in the class and there were only seven other students in the class, your question would have had a false presupposition. Second, such questions can receive partial or incomplete answers. For example, if my response to your question had merely been to say that I chose the student in the blue beret to lead the discussion, I would have told you why she is leading the discussion but not why she rather than any of the other students in the class is doing so. In some cases, incomplete answers can be completed. Were you to press me by asking why I chose her rather than one of the others, I could complete my answer by replying that I chose her because she is the only expert on Spinoza in the group. In other cases, however, incomplete answers cannot be completed, at least not in a way that is explanatory. Upon being pressed, my only true response might have to be that I picked her to lead the discussion arbitrarily, for no special reason. What it is important to keep in mind about such cases is that my claim that I assigned the student in the blue beret to lead the discussion has some explanatory force, because it tells you why she is leading the discussion, even if there is no explanation to be had for why she rather than one of the others is the discussion leader.

Third, in order to drive this point home, it may be helpful to contrast this case of partial explanation with an even more radical failure of explanation. Maybe there is no explanatory answer to your question. Perhaps the student in the blue beret just by chance made a casual remark as she entered the room, and a conversation spontaneously coalesced around it. I did not assign her the role of leader; nor did she deliberately assume the role. She just happened to become the discussion leader; she fell into the role. That she is the discussion leader is a brute inexplicable fact. In such a case, my best response to your question may be simply to say there is no reason why she is the leader and no reason why she rather than one of the

other students is the leader. Such a response may succeed in getting across to you the point that there is no true *explanatory* answer to your question.

It is worth mentioning that your question does not presuppose that the natural state of my class is one in which someone other than the student in the blue beret is leading the discussion. Suppose you had asked instead: Why is the student in the blue beret leading the discussion, rather than one of the other students or none of them? In asking this question, you would have presented me with a range of possible alternatives that has been increased by adding a new one. But this expansion does not bring with it the presupposition that the natural state of my class is one in which it is leaderless.

It might be claimed that it is a presupposition of every explanation-seeking contrastive why-question that it has a complete explanatory answer, as illustrated by my original example. When such a question has only a partial explanatory answer, as illustrated by the first variation on my example, and a fortiori when it does not even have a partial explanatory answer, as illustrated by the second variation, the question itself has a false presupposition. But one might also interpret the situation in another way. In the first variation, it might be claimed that a perfectly legitimate answer to the question consists in giving the partial explanation that exists and then going on to assert that no further explanation is to be had. And in the second variation, it might similarly be claimed that a legitimate answer to the question consists in simply pointing out that not even a partial explanation is to be had. I do not think it is necessary to devote a lot of attention to this issue for purposes of the present discussion. I do acknowledge, however, that I will need to reckon with the two variations on my original example later on in my argument.

In order to facilitate doing so, I shall adopt the point of view that an adequate answer to an explanation-seeking contrastive why-question need not provide a complete explanation. It can instead convey the information that only a partial explanation or no explanation at all is to be had. As I see it, such a question does not in every context in which it may properly be asked presuppose that the search for a complete explanation is bound to succeed. In some contexts it is clear that the questioner does assume that such a question has a complete explanatory answer. An example is furnished by a passage from Leibniz's "The Principles of Nature and of Grace Based on Reason" that Grünbaum cites. After stating the Principle of Sufficient Reason, Leibniz goes on to say that "this principle laid down, the first question which should rightly be asked will be, *why is there something rather than nothing*" (p. 8)? When Leibniz asks himself this explanation-seeking contrastive why-question, he does assume that its answer will be a complete explanation. Given that the Principle of Sufficient Reason has, as he says, been laid down, this assumption is justified. However, a question of this sort can in other contexts be properly asked and adequately answered even if the Principle of Sufficient Reason is not being taken for granted and no such assumption is being made. Indeed, some theists who ask Leibniz's question reject the Principle of Sufficient Reason on the grounds that it poses a threat to God's freedom in creating.

With this excursus into our informal explanatory practices as back-

ground, let us now resume our efforts to come to grips with Grünbaum's pseudoproblem charge. What is the question on which he wishes us to focus? About this he is quite clear. It is what he describes as the cosmic existential question: Why is there anything at all, rather than just nothing? We can, I think, be a bit more precise about what the question is without making any particularly controversial assumptions. Platonists will typically believe that some abstract entities such as pure sets, properties, propositions or numbers exist necessarily and so could not have failed to exist. In order to avoid having our question presuppose the falsity of Platonism, we may restrict its scope to the existence of contingent things, things that could have failed to exist. Thus restricted, the question takes the following form: Why is there anything contingent at all, rather than just nothing contingent? In posing this question, we may not, however, presuppose either that there is or that there is not a concrete necessary being of the kind traditional theists conceive God to be. The question is to leave this issue open. So understood, the question is an explanation-seeking contrastive why-question. It presents us with just two alternatives: the existence of something contingent and the existence of nothing contingent. And it asks not only for an explanation of why something contingent exists but also for an explanation of why something contingent, rather than nothing at all contingent, exists.

This question has a couple of fairly uncontroversial presuppositions. It presupposes that something contingent exists, and it presupposes also that the existence of nothing contingent is a genuine alternative. The first of these presuppositions seems to be obviously true. The claim that everything that there is exists necessarily is extremely counterintuitive. The second could be doubted. One might deny that all contingent things could fail to exist, even if one granted that each contingent thing could fail to exist. But Grünbaum does not raise a doubt of this sort. Neither of these presuppositions is the target of his criticism.

What, then, is his target? On this issue too he is very clear. It is the thesis he sometimes describes as asserting the normalcy of nothingness. Spelled out in slightly more detail, the assumption is that the natural, spontaneous, externally undisturbed or normal state of affairs is one in which nothing, or at any rate nothing contingent, exists. In his 2000 paper, he says that "hereafter, I shall designate this thesis as asserting 'the spontaneity of nothingness', or 'SoN' for brevity" (p. 5). Grünbaum points out, correctly in my opinion, that in science what is taken to be the natural or normal state of physical and biological systems, which is their state when they are not subject to any external influences, agencies or forces, is theory-relative. Thus, for example, uniform rectilinear motion is a natural or unperturbed state in Newtonian physics, but not in Aristotelian physics.

But it seems to me that, when our explanation-seeking constrastive why-question is interpreted in one perfectly natural and acceptable way, SoN is not, strictly speaking, among its presuppositions. The question presents us with two alternatives: something contingent existing or nothing contingent existing. It presupposes that one of them, something contingent existing, actually obtains. It also presupposes that the other, nothing contingent existing, is a genuine alternative in the sense that it might have obtained instead. And it asks us to explain why the actual alternative

obtains and to explain why it, rather than the other alternative, obtains. It does not, however, presuppose that the alternative which does not obtain is the natural or spontaneous state of affairs. Maybe this point can be most easily grasped if we speculate a bit about how our question might be answered if SoN were false. So suppose that the natural or spontaneous state is one in which something contingent exists. Call this supposition the spontaneity of something, or SoS for short. Given SoS, we respond to the question of why something contingent exists by saying that it is natural for this to be the case, and we respond to the question of why something contingent exists, rather than nothing contingent, by adding that no external force or agency intervenes to prevent all contingent beings from existing. Were all these claims true, we would have provided an acceptable answer to our question despite the fact that SoS would be true and SoN false. This seems to me to show that the truth of SoN is not, strictly speaking, a presupposition of the question.

However, I am not inclined to make much of this point. I am willing to grant for the sake of argument that some acceptable interpretation of our question in some sense presupposes SoN. Evidence that Grünbaum has such an interpretation in mind is to be found in remarks I quoted earlier in which he speaks of the question *calling for* an external cause of the very existence of the world. If one supposes that the question itself calls for an external cause in order to explain why one of the alternatives, something contingent existing, obtains, then one will surely be entitled to think that the question also demands that the only other alternative, nothing contingent existing, be regarded as the default position. It would obtain in the absence of any such cause and so would be the spontaneous or natural state of affairs. I view it as legitimate for Grünbaum to rely on such an understanding of the question in the context of his debate with *some* traditional theists because some of them do assume that SoN is true. In his 2000 paper, Grünbaum presents plenty of textual evidence to support his claim that Leibniz and Richard Swinburne accept SoN. So I shall not dispute the view that SoN is, in some sense, a presupposition of our explanation- seeking contrastive why-question in some contexts.

In order to establish the pseudoproblem charge, however, Grünbaum also needs to show that SoN is ill-founded or demonstrably false. He offers no argument for the conclusion that it is demonstrably false, but he does try to show that it is ill-founded. It might be objected at this point that SoN, being self-evident or obviously true, does not need to be founded on anything other than itself in order to be epistemically acceptable. This claim does not seem to me to be correct. More important, Grünbaum is entitled to reject it in the context of his debate with traditional theists, for many of them do try to provide foundations for SoN or something similar in considerations of simplicity. As Grünbaum interprets their works, both Leibniz and Swinburne give conceptual or a priori arguments from the simplicity of nothingness to the spontaneity of nothingness. In the case of Leibniz, Grünbaum contends that the argument rests on the famous principle that nothing is simpler and easier than something.

Grünbaum maintains that such a priori arguments are deeply misguided. His view on this matter rests on two reasons. The first is that the issue

of which state of affairs is spontaneous or unperturbed is to be decided in a posteriori terms. He says: "The character of just what behavior of the actual world and of its subsystems is 'natural' is an empirical *a posteriori* matter, rather than an issue that can be settled *a priori*" (p. 9). He takes this to be the lesson we are to draw from changes in view about what is spontaneous in response to accumulating empirical evidence during the course of the history of science. His second reason is that SoN is not well supported by empirical evidence. He puts this point as follows: "SoN has no *empirical* credentials at all, is acknowledged, in effect, by the purely conceptual arguments for it which have been offered by its recent defenders" (p. 9). The recent defenders Grünbaum has in mind are Leibniz and Swinburne. His thought presumably is that able philosophers such as Leibniz and Swinburne would surely have appealed to empirical evidence for SoN if there were any available to them. I think these two reasons would be conclusive if they were correct. If only empirical evidence can settle the issue of whether SoN is true and it is not well supported by empirical evidence, then SoN is, indeed, ill-founded and the pseudoproblem charge has been established. So when Grünbaum goes on to set forth several objections to the details of Swinburne's views on simplicity, they are really lagniappe.

I accept Grünbaum's second reason. It seems to me that current scientific theories and the empirical evidence on which they rest provide little or no support for SoN. But I do not accept his first reason. I do not wish to rule out the possibility of empirical evidence that might have some bearing on whether nothing contingent existing is the normal or spontaneous state of affairs. But I believe that the de facto history of science falls short of establishing the strong modal conclusion that this issue *cannot* be settled a priori because only empirical evidence could have a bearing on it. As I see it, the claim that only empirical evidence of the sort that supports scientific theories could have a bearing on the acceptability of SoN is scientistic in a bad sense. To be sure, it is not scientistic in the particular sense Grünbaum considers in his 2000 paper. Following Richard Gale and Alexander Pruss, he defines scientism "as implying that everything that *is* explained is explained by either science or some kind of explanation having strong affinities to actual scientific explanation" (p. 9). I agree that any view having this implication is scientistic in a bad sense. But I think any view implying that only the kinds of evidence that support scientific theories can bear on claims about the character of actuality is also scientistic in a bad sense.

In my opinion, the principle that nothing is simpler than something has a good deal of a priori intuitive support. I recognize, of course, that my intuitions are fallible, and so I grant that the principle's intuitive support provides it with only prima facie epistemic justification. Nevertheless, if this intuitive justification were undefeated and if, in addition, there were a compelling a priori argument from the simplicity of nothingness to the spontaneity of nothingness, then some a priori epistemic justification would be transmitted to SoN. In that case, SoN would have an epistemic foundation and might even be well-founded.

Yet I shall not try to construct an a priori argument from simplicity to SoN. For I anticipate that, even if I could successfully perform this task, Grünbaum would not concede that SoN is well-founded but would

instead raise familiar problems about simplicity. It is fairly clear that a premise such an argument would need concerns the *ontological* simplicity of nothingness. But the a priori justification furnished by intuition seems, at least in the first instance, to pertain to *conceptual* simplicity. Grünbaum's discussion of Swinburne's views in the 2000 paper shows that he is aware of the distinction between conceptual and ontological simplicity (p. 13). So even if he were to grant that a priori intuition confers justification on the claim that nothing is conceptually simpler than something, he could still challenge me to show that this justification transfers from the conceptual claim to the thesis that nothing is ontologically simpler than something. My hunch is that conceptual simplicity tracks ontological simplicity under favorable conditions. But I do not know how to prove that my hunch is true or that conditions are favorable in the case under consideration. Given the dialectical situation, then, I doubt that pursuing the line of thought I have been outlining is likely to advance the discussion.

In the remainder of this paper, I shall therefore try to move the discussion forward in another way. My strategy will be to argue that the explanation-seeking contrastive why-question which concerns us can be formulated in such a way that it clearly does not have SoN or any other assumption about what is natural, normal or spontaneous as a presupposition. In constructing this argument, I shall appeal to the modal metaphysics of possible worlds. I shall adopt the account of possible worlds developed by Alvin Plantinga.[7] To be sure, it has rivals, most notably the account given by David Lewis.[8] So some of my metaphysical assumptions will be controversial. However, I shall at least be able to bypass the controversies generated by claims about the spontaneity and simplicity of nothingness. Or, at any rate, so I hope. Of course, I may succeed in doing nothing more than introducing into the debate new topics about which Grünbaum and I will disagree. But perhaps even that would count as progress of sorts.

According to Plantinga, a possible world is, intuitively speaking, a way things could have been. More formally, a possible world is a possible state of affairs of some kind.[9] The sort of possibility involved is broadly logical possibility. Some possible states of affairs obtain, while others do not but could have obtained. But not every possible state of affairs is a possible world. Plantinga uses three auxiliary definitions in his explication of the notion of a possible world. The first says this: "A state of affairs S *includes* a state of affairs S^1 if it is not possible (in the broadly logical sense) that S obtain and S^1 fail to obtain."[10] The second goes as follows: "A state of affairs S *precludes* a state of affairs S^1 if it is not possible that both obtain." And the third is this: "A state of affairs S is *complete* or *maximal* if for every state of affairs S^1, S includes S^1 or S precludes S^1."[11] A possible world, then, is a possible state of affairs that is complete or maximal. Possible worlds are mutually exclusive. Exactly one possible world actually obtains. The possible world which obtains is the actual world.

Contingent things are such that they could have failed to exist. So we may assume that, for every contingent thing, there is a possible world in which it fails to exist. However, it does not follow from this assumption that there is a possible world in which every contingent thing fails to exist. The derivation of this conclusion from the assumption commits a familiar

quantifier interchange fallacy. I shall therefore adopt the special assumption that there is one possible world in which no contingent thing exists in addition to Plantinga's general account of possible worlds. This possible world includes the possible state of affairs of nothing contingent existing. If it were actual, the state of affairs of nothing contingent existing would obtain. I judge it to be likely that Grünbaum would grant my special assumption, if only for the sake of argument since he does not challenge the logical possibility of a state of nothingness, only its privileged status as the spontaneous or natural state.

In the interests of clarity, it is worth noting that possible worlds understood in this fashion are not the worlds of the so-called "many worlds interpretation" of quantum mechanics. Those quantum worlds all coexist because they branch off from one another. The state of affairs of one such quantum world existing neither includes nor precludes the state of affairs of another existing, and so no such state of affairs is maximal. If a possible world in which the many worlds interpretation holds were actual, then all the members of its ensemble of quantum worlds would exist. And if the many worlds interpretation has contingent features such as, for example, the particular values of physical constants, then there are many possible worlds of this sort. Similarly, the many worlds sometimes postulated in accounts of cosmic fine-tuning are not possible worlds. If a possible world in which such an account holds were actual, then all the many worlds the account postulates would coexist.

With this theoretical machinery as background, we are in a position to ask an explanation-seeking contrastive why-question. It is this: Why does the possible world that is in fact actual obtain, rather than any of the other possible worlds? This question presents as alternatives to the possible world that does in fact obtain each and every other possible world. However, it does not presuppose that any of them is the one that would obtain spontaneously; it privileges none of them. To be sure, the possible worlds that are the alternatives to the actual world consist of many in which some contingent things exist and one in which no contingent things exist. So what is in effect the same question could be formulated as follows: Why does the possible world that is in fact actual obtain, rather than either one of the other possible worlds in which something contingent exists or the possible world in which nothing contingent exists? But, though this formulation of the question provides additional information about what the alternatives to the actual world are, it does not privilege any one among them. In particular, it does not presuppose that the possible world in which nothing contingent exists would obtain spontaneously or naturally in the absence of any world-actualizing causal activity.

There are several candidates that would, if true, be adequate answers to this question. One candidate is that the possible world which is in fact actual obtains as a matter of brute inexplicable fact. According to this candidate, there is no explanation of why the world which is actual obtains or of why it obtains rather than one of the alternatives. However, there are also theistic candidates. One of them asserts that God actualized the possible world which obtains but did so arbitrarily. According to this candidate, God's activity explains why the possible world which is in fact actual

obtains, but there is no explanation of why it obtains rather than one of the alternatives, no explanation of why none of them obtains instead. Another theistic candidate is Leibnizian. It claims that God actualized the possible world which obtains and did so because it is the best of all possible worlds. According to this candidate, God's activity explains why the possible world which is in fact actual obtains, and the explanation of why it obtains rather than one of the alternatives is that God chooses to actualize it because it is the best possible world and so all the alternatives are inferior to it. No doubt there are other candidates. Mentioning just these three, however, is enough to allow me to emphasize the point that is crucial in the present context. Any one of the three candidates just described would, if true, be an adequate answer to our question. The question itself does not demand a theistic answer; it does not rule out the answer that the possible world which is in fact actual obtains as a matter of brute inexplicable fact. Neither does it rule out either of the theistic answers mentioned above. In short, the question itself permits, but it does not require, a theistic answer.

Thus this explanation-seeking contrastive why-question escapes entirely from Grünbaum's pseudoproblem charge. It does not presuppose that the possible world in which nothing contingent exists would be the one to obtain spontaneously or is in any other way privileged. What is more, though it permits a theistic answer, it does not require one.

One complication may be worth some consideration in passing. It is plausible to suppose that some possible worlds have in them agents who are free in the libertarian sense and exercise their liberty in freely performing some actions. If such a possible world were actual, then agents who sometimes act freely would exist. And it is also plausible to suppose that some possible worlds contain physical things that have indeterministic capacities and exercise these capacities in acting randomly. If such a possible world were actual, then physical things that sometimes act randomly would exist. It might be thought that even God cannot actualize a possible world in which there are other agents who act freely or physical things that act randomly. Even if God can actualize the state of affairs of a certain agent performing a particular action, God cannot actualize any state of affairs that includes this agent freely performing that action. Similarly, even if God can actualize the state of affairs of a certain atom decaying at a particular instant, God cannot actualize any state of affairs that includes this atom randomly decaying at that instant.

In a sense, this is quite correct. When Plantinga speaks of strong actualization, that is the sense of actualization he is trying to explicate. As he puts it, "in the strong sense, God can actualize only what he can *cause* to be actual; in that sense he cannot actualize any state of affairs including the existence of creatures who freely take some action or other."[12] And, in that sense, God also cannot actualize any state of affairs that includes some physical thing acting randomly. So if the possible world that is in fact actual contains both agents who sometimes act freely and physical things that sometimes act randomly, then the theistic explanation of why it obtains cannot be that God strongly actualizes it. Strong actualization by God will explain why some states of affairs included in it obtain. But the free actions of other agents will explain why other states of affairs included in it obtain.

And the exercise of indeterministic capacities will explain why the states of affairs of assorted physical things acting randomly at various times obtain. As far as I can see, however, this complication does not affect anything in the argument to follow, and so I shall set it aside.

At this point in the argument, I shall make a brief detour in order to deal with an objection in Grünbaum's 2000 paper. After reporting my approval in correspondence of his reconstruction of a deductive theistic volitional explanation, Grünbaum sets forth the following explanation sketch: "Premise 1. God freely willed that the state of affairs described in the *explanandum* ought to materialize. Premise 2. Being omnipotent, he was able to cause the existence of the facts in the *explanandum* without the mediation of other causal processes. Conclusion. Our world exists, and its contents exhibit its most fundamental laws" (p. 20). Though I would not put such an explanation in exactly the words Grünbaum uses, I do think that a theistic explanation of why the possible world that is in fact actual obtains would appeal to a premise citing God's willing to actualize that possible world and to a premise citing God's power to produce what he thus wills.

Grünbaum criticizes both premises of this explanation on epistemological grounds. His objection to its second premise is that "Premise 2 unwarrantedly assumes the availability of a successful cosmological argument for the existence of the God of theism" (p. 21). It seems to me that this objection is misguided. Grünbaum's error is underestimating the number of sources from which justification for the existence of the God of theism can be derived. In addition to the traditional arguments of natural theology, they include religious experience and testimony to divine revelation provided by scripture and tradition. And, of course, evidence from several sources can combine to yield a cumulative case argument for the existence of the God of theism.[13] So even if the theist who asserts Premise 2 must assume that belief in the existence of the God is justified, such a theist need not assume that justification comes from a successful cosmological argument. Hence Premise 2 does not assume the availability of a successful cosmological argument and a fortiori does not unwarrantedly make such an assumption.

Grünbaum's objection to the explanation's first premise is more complicated. He charges that it is *ex post facto* "because the content of the volition imputed to God is determined retrospectively, depending entirely on what the specifics of the most fundamental laws have turned out to be" (p. 21). And he imposes on the explanation the epistemic demand that "it will succeed *only if* the theist can produce cogent evidence, *independent of the explanandum*, for the very content of the volition that the proffered explanation imputes to the Deity" (p. 21). I grant that the explanation of why the possible world which is in fact actual obtains is *ex post facto*. Since a possible world is a maximal possible state of affairs, the explanandum includes, at least implicitly, everything that could count as evidence for the content of the volition attributed to God by the first premise. Thus the explanation simply cannot satisfy Grünbaum's demand for evidence independent of the explanandum for the content of that divine volition. But I challenge the legitimacy of Grünbaum's epistemic demand. Even if it is legitimate to impose a demand of this kind on scientific explanations, it seems to me to be scientism of just the sort explicated by Gale and Pruss to extend this

demand to a theistic volitional explanation of why the possible world which is in fact actual obtains. In his 2000 paper, Grünbaum does nothing to show that such an extension is legitimate.

However, Grünbaum's reconstruction of a theistic volitional explanation has the merit of allowing us to see with striking clarity a limitation of an explanation of this type. If correct, it would explain only why the possible world which is in fact actual obtains. It would not also explain why it, rather than any of the alternatives, obtains. Hence the success of such an explanation would leave open these three options. First, there is no explanation of why the possible world which is in fact actual obtains, rather than another possible world, because God's choice to actualize it was arbitrary. Second, there is an explanation of why this possible world rather than another obtains, because God had a sufficient reason to actualize it, such as the Leibnizian contention that it is the best possible world, and this reason can be understood by human beings. And, third, there is an explanation of why this possible world, rather than another, obtains, because God had a sufficient reason to actualize it, but this reason is utterly beyond our ken. What is worth emphasizing in the present context is that the success of the argument Grünbaum has reconstructed, like the explanation-seeking contrastive why-question to which it would be a partial explanatory answer, would not foreclose for theists any of these options. My guess is that a majority of contemporary theists would prefer the third if asked to choose among them.

The explanation-seeking contrastive why-question about possible worlds I have been discussing so far presents us with a maximally fine-grained array of alternatives. But, of course, similar questions with more coarse-grained alternatives can also be asked. An interesting one is this: Why does a possible world with the natural laws of the actual world obtain, rather than some possible world with a different nomological structure? This question presents as alternatives to the ensemble of possible worlds in which the laws of the actual world hold all the ensembles of possible worlds in which other laws hold and, if there are possible worlds without laws, the ensemble of lawless worlds. But the question itself does not privilege any of these ensembles; it does not presuppose that any of the alternative nomological structures would hold spontaneously or naturally. To be sure, if there are lawless possible worlds, the question can be expanded as follows: Why does a possible world with the natural laws of the actual world obtain, rather than some possible world with different laws or a possible world without any laws? However, though this formulation provides additional information about the alternatives to the nomological structure of the actual world, it does not privilege any of them. In particular, it does not presuppose that lawlessness would hold spontaneously or naturally in the absence of any law- ordaining causal activity.

And, as in the previous case, there are several candidates that would, if true, be adequate answers to this question. One candidate is that a possible world with the natural laws of the actual world obtains as a matter of brute inexplicable fact. According to this candidate, there is no explanation of why a world in which the laws of the actual world hold obtains or of why such a world obtains rather than some world with a different nomological structure. Other candidates are theistic. One of them asserts that God arbitrarily

ordained that the laws of the actual world hold. According to this candidate, God's activity explains why the laws of the actual world hold, but there is no explanation of why they hold rather than other laws or no laws. Other theistic candidates claim that God ordained that the laws of the actual world hold and did so for some sufficient reason, either a reason we can grasp or one beyond our comprehension. According to these candidates, God's activity explains why the laws of the actual world hold, and the explanation of why they hold rather than other laws or no laws is that God chooses to ordain them because of his sufficient reason for preferring that they hold to the alternatives. Once again, then, the question itself neither demands nor rules out a theistic answer. It permits both theistic and nontheistic answers.

Thus this explanation-seeking contrastive why-question too escapes unscathed by Grünbaum's pseudoproblem charge. However, he helpfully points out in his 2000 paper that his original pseudoproblem charge was not directed against this question. He remarks: "Assuming that the most fundamental laws and facts of the world are logically contingent, one can clearly allow the question why they are what they are, as contrasted with logically possible alternatives to them, even as one rejects the different existential question 'Why is there anything at all, rather than just nothing?' Thus, when I indicted the latter as a pseudo-problem, I did not thereby disallow the former" (p. 19). But this remark generates a problem for Grünbaum's position. Surely it is a fundamental fact of the world that some contingent things exist. Given my special assumption that it is logically possible that nothing contingent exists, which I have provided reason for thinking Grünbaum would not dispute, nothing contingent existing is a logically possible alternative to this fundamental fact. So if Grünbaum really does allow the question of why this logically contingent fundamental fact is what it is, as contrasted with that logically possible alternative, then it seems that he cannot consistently reject the question 'Why is there anything contingent at all, rather than just nothing contingent?' So Grünbaum's own remarks put the original pseudoproblem charge under some intellectual pressure.

In my 1993 paper, I argued from the logical contingency of scientific laws to the conclusion that there are explanatory problems that science cannot solve. Briefly summarized, the argument goes as follows. Assume that science explains laws by deducing them from other laws and that all scientific laws are logically contingent. Consider any scientific law. Since it is logically contingent, the question of why it holds rather than not doing so arises. If it is a fundamental law, it cannot be deduced from any deeper law, and so there is no scientific explanation of why it holds. If it is not fundamental, the same question arises about the deeper law from which it can be deduced. Either the regress terminates in a most fundamental law or it goes on to infinity. If the regress terminates, the most fundamental law is also logically contingent. It gives rise to the question of why it holds rather than not doing so, and there is no scientific explanation of why it holds. If the regress goes on to infinity, then for every law there is deeper law such that former can be deduced from and so is scientifically explained by the latter. In this case, every law in the infinite hierarchy has a scientific explanation. But the infinite hierarchy itself is logically contingent. Thus the question of why it holds rather than not doing so arises. And whatever the answer to

this question may be, it will not take the form of deducing one law from another, and so there is no scientific explanation of why the infinite hierarchy of laws holds. Hence, if all scientific laws are logically contingent and scientific explanation of laws consists of deducing one from another, there is at least one explanatory problem that scientific explanation cannot solve. Grünbaum does not challenge this conclusion in his 2000 paper.

But it does not follow from my conclusion that an explanatory problem that has no scientific solution can be solved by other means. The problem may, after all, be insoluble. I tried to make this clear in my 1993 paper by acknowledging that my argument does not rule out it being a matter of brute inexplicable fact that the laws of the actual world, or at least the most fundamental among them, hold. Speaking in particular of the law of matter-energy conservation, I noted that "I have not shown that it is not an inexplicable brute fact that a certain amount of matter-energy exists and is conserved."[14] So my argument does not, and was never meant to, rule out as an answer to the question of why the laws of nature of the actual world hold the candidate according to which there is no explanation for this, scientific or otherwise, since they hold as a matter of brute inexplicable fact. At one point in his 2000 paper Grünbaum attributes to me a view that might mislead readers into thinking that I took myself to have ruled out this answer. Coupling me with Swinburne, he attributes to us the contention that "the specific content of the scientifically most fundamental laws of nature, including the constants they contain, requires *supra*-scientific explanation" (p. 1). However, this contention admits of more than one interpretation. On one reading, it is conditional. Its claim is that it must be the case that the most fundamental laws of nature have a supra-scientific explanation, or at any rate an extra-scientific explanation, if they have any explanation at all. Speaking for myself and not Swinburne, I continue to think that my argument establishes this claim. But on another reading, its stronger and unconditional claim is that it must be the case that the most fundamental laws of nature have a supra-scientific, or at any rate an extra-scientific, explanation. Speaking again only for myself, I have never been under the illusion that my argument establishes this claim, though I believe that the most fundamental laws of nature do indeed have a supra-scientific explanation of a theistic sort.

We may now, at last, return to the question with which we began. It is this: Why does a possible world in which some contingent things exist obtain, rather than the possible world in which nothing contingent exists? This question presents us with a maximally coarse-grained array of alternatives. The only alternative to the ensemble of possible worlds in which something contingent exists is the unique possible world in which nothing contingent exists. As before, however, the question itself does not privilege the possible world in which nothing contingent exists; it does not presuppose that the possible world in which nothing contingent exists would obtain spontaneously or naturally.

Also as before, there are several candidates that would, if true, be adequate answers to this question. One is that a possible world in which something contingent exists obtains as a matter of brute inexplicable fact. According to this candidate, there is no explanation of why a world in

which something contingent exists obtains or of why such a world obtains rather than the world in which nothing contingent exists. Then there are the familiar theistic candidates. One of them claims that God arbitrarily actualized a possible world in which something contingent exists. According to this candidate, God's activity explains why a possible world in which something contingent exists obtains, but there is no explanation of why such a world obtains rather than the world in which nothing contingent exists. Other theistic candidates maintain that God actualized a possible world in which something contingent exists and did so for some sufficient reason, either a reason we can comprehend or one beyond our ken. According to these candidates, God's activity explains why a possible world in which something contingent exists obtains, and the explanation of why such a world obtains rather than the world in which nothing contingent exists is that God chooses to actualize such a world because of his sufficient reason for preferring such a world to the world in which nothing contingent exists. I suppose a theist might speculate that God's sufficient reason for choosing to actualize a world in which something contingent exists is that such a world is richer in content and so less simple than the world in which nothing exists. But the question itself does not presuppose that God has a sufficient reason for his choice or, for that matter, even that God exists, and so it does not presuppose that God has this reason or anything like it as a ground of choice. Once more the question itself permits both theistic and nontheistic answers.

Hence this explanation-seeking contrastive why-question also escapes from Grünbaum's pseudoproblem charge. It does not presuppose SoN or anything like it. And this is the question to which the pseudoproblem charge was addressed. For in a passage I have already quoted he explicitly says that he indicted as a pseudoproblem the existential question 'Why is there anything at all, rather than just nothing?' which is an informal variant of the question currently under consideration. So it seems that we may conclude that the pseudoproblem charge is without merit.

The existence of logically contingent things also gives rise to an explanatory problem that science cannot solve. For the sake of argument, suppose that the existence of one contingent thing can be explained scientifically in terms of having been brought into existence by the causal powers of another contingent thing that already exists. Either such a causal chain extends to infinity, or it terminates in an initial contingent thing not brought into existence by a predecessor in the chain. If the chain is infinite, the existence of each of its members is scientifically explained by the exercise of the causal powers of its predecessor. But the chain as a whole exists contingently. Either its existence poses an explanatory problem that science cannot solve, or its existence has a scientific explanation in terms of deduction from laws. If the chain terminates in an initial contingent thing, either its existence poses an explanatory problem that science cannot solve, or its existence has a scientific explanation in terms of deduction from laws. The possibility of explaining scientifically the existence of either an infinite contingent chain or the initial contingent member of a finite chain in terms of deduction from laws can be illustrated by using an example to which Grünbaum draws our attention. According to the original steady-state cos-

mological theory of Bondi and Gold, matter spontaneously accretes or pops into existence. As Grünbaum notes, "this spontaneous popping into existence follows deductively from the conjunction of the theory's postulated matter-*density*-conservation with the Hubble law of the expansion of the universe" (p. 6). So if this theory were true, these two laws would explain the existence of the matter that accretes spontaneously. But whatever laws might explain the existence of an infinite contingent chain or the contingent initial member of a finite chain would be logically contingent. Thus, when the argument I have previously given for the case of laws is applied to them, it will give rise to an explanatory problem that science cannot solve. Therefore, either the existence of an infinite contingent chain or the existence of the initial contingent member of a finite chain poses an explanatory problem that science cannot solve, or the contingent laws that explain the existence of such things give rise to an explanatory problem that science cannot solve. So I also conclude that the existence of logically contingent things eventually generates, in one way or another, an explanatory problem that science cannot solve.

Before my conclusions will be secure, however, a final complication must be addressed. In his 2000 paper, Grünbaum charges that I offered a non-sequitur in criticizing his views in my 1993 paper because I conflated two distinct questions or problems. He develops this charge against me in the following very revealing passage:

> In a passage that he himself had adduced from Leibniz, that philosopher had lucidly stated the pertinent two distinct questions when he demanded 'a full reason why there should be a world at all, and why it should be such as it is'. Quinn reasoned fallaciously that if the latter question is a 'genuine explanatory problem' even when addressed to the most fundamental laws and facts of nature—as he claims—then so also the former question 'why is there is [*sic*] a world at all?' must be genuine. But in my complaint of pseudo-problem, I had targeted only the question: 'What is the *external cause* of the very existence of the universe?' It is *this* problem that is at issue when Quinn speaks of my dismissal of 'the problem of creation' (p. 19, references omitted).

I am grateful to Grünbaum for highlighting the distinction between two Leibnizian questions. Put in terms of the modal metaphysics of this paper, one is the question of why the logically contingent laws of the actual world hold, rather than some alternative to this being the case. Call this the question of why contingent laws hold. The other question is why some logically contingent things exist, rather than nothing contingent at all. Call this the question of why contingent things exist. In order to avoid conflating these questions, I have treated them separately in the discussion above. And, of course, once it has been acknowledged that they are distinct questions, it becomes obvious that what has been shown to hold for one of them cannot just be assumed to hold for the other. In my 1993 paper, I argued that the question of why contingent laws hold poses a genuine explanatory problem. Grünbaum does not dispute this conclusion. Instead he complains that I did not go on to argue that the question of why contingent things exist

also poses a genuine explanatory problem. He is right about this. So I concede that there is a large argumentative gap in my 1993 paper.

In this paper, I have closed that gap. I have done so by setting forth precise versions of both the question of why contingent laws hold and the question of why contingent things exist within the framework of the metaphysics of possible worlds, arguing that the question of why contingent laws hold presupposes nothing about what state of lawfulness or lawlessness is spontaneous or natural, and then arguing separately that the question of why contingent things exist does not presuppose that the state of affairs of no contingent things existing is spontaneous or natural. Indeed, I have done more. I have argued that the question of why contingent laws hold does not presuppose the existence of an external cause for the holding of the contingent laws of the actual world, for I have insisted that an answer to this question that would be adequate if true is that those laws hold as a matter of brute inexplicable fact and so hold in the absence of any cause whatsoever and a fortiori in the absence of any external cause. What is more, I have also argued that the question of why contingent things exist does not presuppose the existence of an external cause for the existence of the contingent things of the actual world, for I have also insisted that an answer to this question that would be adequate if true is that those things exist as a matter of brute inexplicable fact and so exist in the absence of any cause for their existence whatsoever and a fortiori in the absence of any external cause for their existence.

In the long passage by Grünbaum quoted above, he introduces a new question. It asks: What is the external cause of the very existence of the universe? Stated within my modal metaphysics, the question is this: What is the external cause of the existence of the contingent things of the actual world? Call this the question of what externally causes contingent things to exist. In that passage, he claims that this is the question to which the pseudoproblem charge is directed. However, it is abundantly clear that the question of what externally cases contingent things to exist is distinct from the question of why contingent things exist. The question of what externally causes contingent things to exist is not a why-question at all, much less an explanation-seeking contrastive why-question. Hence we should not conflate these two questions. Even if Grünbaum were to have shown that the question of what externally causes contingent things to exist poses a pseudoproblem, it would not follow from this without further argument that the question of why contingent things exist also poses a pseudoproblem. Yet, as we have seen, Grünbaum does claim that the question of why contingent things exist also poses a pseudoproblem. He seems to conflate these distinct questions.

But has he shown that the question of what externally causes contingent things to exist poses a pseudoproblem? I think not. To be sure, this question clearly does presuppose that there is an external cause for the existence of contingent things. In order to show that the question poses a pseudoproblem because it has this presupposition, however, he would have to show that the presupposition is demonstrably false or ill-founded. Grünbaum certainly has not shown that it is demonstrably false. He has not demonstrated that there is no external cause for the existence of contin-

gent things. Nor has he shown that it is ill-founded. Even if it is granted for the sake of argument that he has shown that SoN is ill-founded, it will not follow that the presupposition in question is also ill-founded unless it is founded exclusively on SoN. Grünbaum has not shown that this is the case. More specifically, he has not shown that this presupposition is not adequately founded on other considerations. Perhaps it can be shown that it cannot be adequately founded on empirical evidence of the sort on which scientific theories rest. But theists who accept the claim that there is an external cause for the existence of contingent things typically do not found it exclusively on such empirical evidence. And Grünbaum has not shown that it is not adequately founded on considerations derived from other sources, either singly or in combination. To show this would, of course, be an enormous epistemological task. If Grünbaum undertakes it, I will be very interested in seeing whatever results he may achieve.

For now, let me conclude by drawing together the main points for which I have argued in this paper. My main conclusion is that both the question of why the scientific laws of the actual world hold, rather than an alternative nomological structure, and the question of why some contingent things exist, rather than no contingent things, can be elucidated within the framework of a modal metaphysics which allows us to see that in some contexts neither question has the sort of presupposition alleged by Grünbaum's pseudoproblem charge. When asked in such contexts, the question of why there is something contingent, rather than nothing contingent, is not guilty as charged. Both questions pose genuine explanatory problems, not pseudoproblems. I have also argued that in such contexts both questions sooner or later give rise to explanatory problems that science cannot solve. Either such problems have no solutions, in which case some question is to be answered by an appeal to brute inexplicable facts, or they have extra-scientific solutions, in which case theism provides some candidates for the answer to such a question. Once it is realized that the two questions are metaphysical rather than scientific, none of this should seem the least bit surprising. To be sure, my argument for the conclusion that the question about the laws generates explanatory problems science cannot solve relies on the assumption that the scientific laws of the actual world are logically contingent. And my argument for the conclusion that the question about the existence of contingent things gives rise to explanatory problems science cannot solve appeals to the assumption that it is not logically necessary that some contingent things exist. But neither currently accepted theories in scientific cosmology nor the empirical evidence on which they are based conflicts with these assumptions. I therefore think that the pseudoproblem charge should be laid to rest, though perhaps my hope that this will happen is extravagant. If it were to occur, however, the way would be cleared to focusing our attention on assessment of the credentials of theistic candidates for solutions to the genuine explanatory problems that science cannot solve.[15]

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NOTES

1. Adolf Grünbaum, "The Pseudo-Problem of Creation in Physical Cosmology," *Philosophy of Science* 56 (1989), pp. 373-394.
2. Philip L. Quinn, "Creation, Conservation, and the Big Bang," *Philosophical Problems of the Internal and External Worlds*, ed. J. Earman, A. I. Janis, G. J. Massey and N. Rescher (Pittsburgh: University of Pittsburgh Press, 1993).
3. Adolf Grünbaum, "Theological Misinterpretations of Current Physical Cosmology," *Foundations of Physics* 26 (1996), pp. 523-543, Adolf Grünbaum, "Theological Misinterpretations of Current Physical Cosmology," *Philo* 1 (1998), pp. 15-34, and Adolf Grünbaum, "A New Critique of Theological Interpretations of Physical Cosmology," *British Journal for the Philosophy of Science* 51 (2000), pp. 1-43. Page references to Grünbaum's 2000 paper will be made parenthetically in the body of my text.
4. See Philip L. Quinn, "Divine Conservation, Continuous Creation, and Human Action," *The Existence and Nature of God*, ed. A. J. Freddoso (Notre Dame: University of Notre Dame Press, 1983), and Philip L. Quinn, "Divine Conservation, Secondary Causes, and Occasionalism," *Divine and Human Action*, ed. T. V. Morris (Ithaca: Cornell University Press, 1988).
5. William L. Rowe, *The Cosmological Argument* (Princeton: Princeton University Press, 1975), p. 269.
6. For further discussion of the epistemic status of arguments of natural theology, see Philip L. Quinn, "Epistemology in Philosophy of Religion," *The Oxford Handbook of Epistemology*, ed. P. K. Moser (Oxford: Oxford University Press, 2002).
7. Alvin Plantinga, *The Nature of Necessity* (Oxford: Clarendon Press, 1974). An interesting discussion of the question of why there is anything at all that makes use of this sort of modal metaphysics is found in Peter van Inwagen, "Why Is There Anything At All?," *Proceedings of the Aristotelian Society* (1996), pp. 95-110.
8. David Lewis, *On the Plurality of Worlds* (Oxford: Blackwell, 1986).
9. Plantinga, *op. cit.*, pp. 44-45.
10. *Ibid.*, p. 45.
11. *Idem*.
12. *Ibid.*, p. 173.
13. For discussion of diverse religious sources of evidential grounds, see Robert Audi, *Religious Commitment and Secular Reason* (Cambridge: Cambridge University Press, 2000), pp. 116-123. A sketch of how material from various sources might be combined to build a cumulative case is found in William P. Alston, *Perceiving God* (Ithaca: Cornell University Press, 1991), pp. 286-307.
14. Quinn, "Creation, Conservation, and the Big Bang," pp. 607-608.
15. I presented preliminary versions of some of the arguments in this paper in a talk given at the Conference on God and Physical Cosmology held at the University of Notre Dame on January 30-February 1, 2003. Other versions were presented in a talk to the faculty of the science and religion program at Loras College on April 3, 2003, and in a talk at the Adolffest, honoring Adolf Grünbaum on his 80th birthday, at the University of Pittsburgh on April 12, 2003. I am grateful to members of the audiences on those occasions for stimulating discussion and to Adolf Grünbaum for detailed comments.